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An interferometric measuring device for measuring surface characteristics, shapes, distances, and distance variations, e.g., vibrations, in particular in narrow, hollow spaces, of measuring objects, having a probe part and an optical fiber. Surface dimensions are able to be measured, even in very fine bore holes, in that, in a measuring head, at the free end of the probe part approaching the measuring object, the optical fiber projects out and is itself designed as a measuring fiber for illuminating a point of measurement and for picking up measuring light coming from this measuring point.